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Decontamination of Radionuclides from Concrete During and After Thermal Treatment

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Project No.:	64896
Year of Award:	1998
Project Funding:	\$815,720



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Project Goals

- Determine the thermal effects between 100°C and 1400°C on concrete engineering properties, chemical properties, and contaminant behavior.
- Develop detailed finite-element modeling of heat flow in concrete and resulting mechanical stresses.



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Technical Approach

- Evaluate thermal effects on concrete engineering properties (compressive strength, strain, porosity, bulk density, and cracking), chemical properties (dehydration, mineral phase change, and solubility), and contaminant behavior as a function of final temperature, heating rate, and aggregate type (none, limestone, or silica).
- Measure changes in the extractability of radionuclides from heat affected concrete, using short-lived radioisotopes, to ascertain changes in decontamination potential following thermal treatment.



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Project Plan

FY98: Determination of thermal effects on concrete properties and application of finite-element modeling.

FY99: Bench-scale determination and detailed examination of concrete property changes; model calibration and validation.

FY00: Pilot-scale testing of optimal thermal treatments on large concrete surfaces and actual contaminated concrete samples.



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Project Relevancy

STCG Number

Title

ID-S.2.05

Understanding the Physics and Chemistry of
Concrete Decontamination

RF-DD09

Decontamination Of Porous Surfaces